Wind Spinner

Build a decoration that spins in the breeze and creates the illusion of a moving marble.

Kit contains:

- 1 marble
- wire
- thread
- beads

You will need: markers of various diameters and pliers (optional).

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INSTRUCTIONS

Step 1. Bend one end of the wire into a loop to hang your wind spinner. You can use your hands or a pair of pliers.

Step 2. Wrap the rest of the wire around a marker, forming a neat coil. Slide the wire off the marker and gently loosen the coil.

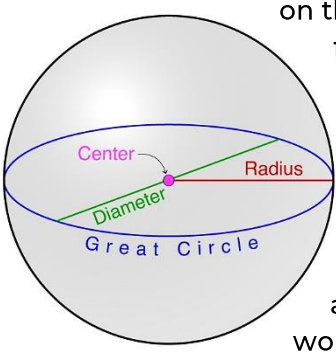
Step 3. Attempt to pop the marble into the wire coil. Does the coil hold the marble? Does it look good? You can experiment by re-coiling your wire around markers with different diameters until you have a shape you like.

Step 4. Pop out the marble. Slide beads onto your wire coil as desired, and then bend the loose end of the wire to keep them from falling off. Pop the marble back into place.

Step 5. Tie the thread to your wind spinner's loop. Hang it up and watch it spin! The marble appears to move up and down, but it's an optical illusion.

PLAYING WITH GEOMETRY

A marble is in the shape of a **sphere**. In math, a sphere is the set off all points located the same distance (**radius**) from a center. Imagine you are a teeny tiny bug holding a rope with a paintbrush on the end. If you swing that fully extended rope around you in all directions in 3D space, you'd paint a sphere. Now imagine that your bug self is standing on that sphere. If you pick any direction and walk straight, you would, by definition, make a line... but that line is in the shape of a circle. Whoa! The biggest line/circle you can make on a sphere is called the **great circle**. The equator is a great circle on our home sphere, Earth.



HOW ARE MARBLES MADE?

We think that glass marbles were originally made by German glassblowers in the 1800s. These craftsmen turned the leftover glass from their work into little orbs to bring home for their kids.

Today, artists are still creating handblown glass marbles, but commercial marbles like the one in this kit are made in factories. The raw materials, which include sand, soda, lime, and silica, are heated up at 2300°F in a giant furnace for at least 24 hours. The molten glass is injected with coloring agents such as cobalt for blue and iron oxide for green. Then the glass is extruded in long strands and cut to size. These gobs of glass roll down ramps and into grooved rollers to turn them into spheres, which then cool down completely.

https://blogs.cdc.gov/niosh-science-blog/2022/07/21/mm-marble-day

https://www.discoveryuk.com/how-its-made/how-are-marbles-made/